UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/716,982 | 11/19/2003 | Binie V. Lipps | FWLPAT019US | 6836 |

43737 7590 02/15/2011

John R. Casperson
P.O. Box 36369
Pensacola, FL 32516-6369

| EXAMINER | |
|---|---|
| REDDIG, PETER J | |
| ART UNIT | PAPER NUMBER |
| 1642 | |
| MAIL DATE | DELIVERY MODE |
| 02/15/2011 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

---

*Ex parte* BINIE V. LIPPS and FREDERICK W. LIPPS

---

Appeal 2010-006801
Application 10/716,982
Technology Center 1600

---

Before ERIC GRIMES, FRANCISCO C. PRATS, and MELANIE L. McCOLLUM, *Administrative Patent Judges*.

GRIMES, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

This is an appeal under 35 U.S.C. § 134 involving claims to a cancer screening method. The Examiner has rejected the claims for lack of

---

[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

enablement and lack of adequate description in the Specification. We have jurisdiction under 35 U.S.C. § 6(b). We affirm the nonenablement rejection.

## STATEMENT OF THE CASE

The Specification states that "[c]ancer cells are transformed cells and the transformation is caused due to the expression of oncogenes in the cells. The soluble product of the transformed cells is a proteonic cancer marker (PCM)." (Spec. 7: 23-25.) The Specification discloses a "cancer screening method. A saliva specimen . . . is brought together with a reagent containing antibodies made against a mixture of plurality of proteonic cancer markers. . . . The occurrence of the immunological reaction is indicative of cancer in the human from which the saliva sample was obtained." (*Id.* at 4: 9-16.)

Claims 1-3, 8-12, 16, 17, 20, and 24 are on appeal. Claim 1 is representative and reads as follows:

> 1. A noninvasive cancer screening method comprising
> a) providing a mixture of proteonic cancer markers from different types of cancer cells, said mixture containing proteonic cancer markers identified and markers not yet identified;
> b) forming polyclonal antibodies against the mixture;
> c) forming a reagent from said polyclonal antibodies;
> d) obtaining a saliva sample from a human not diagnosed with cancer;
> e) bringing said saliva sample together with the reagent to form an assay sample, and
> f) assaying the assay sample by simple ELISA test to determine whether an immunological reaction has occurred in the assay sample,
> wherein ELISA test results higher than a predetermined value are indicative of a positive screening test for cancer.

Claim 16, the only other independent claim, is directed to a similar screening method but requires "a mixture of proteonic cancer markers obtained from breast, liver, colon, and ovarian cancers" and specifies that

"ELISA titer test results of greater than 1:1,000 are indicative of a positive screening test for cancer" (Appeal Br. 24-25).

I.

The Examiner has rejected all of the claims on appeal under 35 U.S.C. § 112, first paragraph, on the basis that the "mixture of proteonic cancer markers" recited in the claims encompasses a genus of highly variant mixtures of different cellular components (Answer 11) but "the genus is only described as a definition by function (i.e. the ability to form polyclonal antibodies), and . . . one of skill in the art cannot readily visualize or recognize the identity of members of the genus" except for the mixtures exemplified in the Specification (*id.* at 13).

Appellants contend that the "practice of the method requires no knowledge of the structures and properties of a compound that would predictably result in the desired activity; rather, the claimed invention is a screening method, not the compounds screened or the compounds employed in the screening." (Appeal Br. 19-20.) Appellants conclude that those skilled in the art would recognize the Specification to show possession of the claimed screening method (*id.* at 20).

We agree with Appellants that the Examiner has not shown that the Specification does not satisfy the written description requirement. The test for whether a claimed invention is sufficiently described is "whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). In other words, "the test requires an objective

inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed." *Id.*

Here, the Specification describes a method of obtaining proteonic cancer markers from different cancer cells (Spec. 5: 25-30), raising antibodies to the PCMs (*id.* at 5: 30-36), and testing saliva samples using the antibodies to screen for cancer (*id.* at 6: 2-7). The Examiner has not adequately explained why the Specification's disclosure would not have been recognized by those skilled in the art to show possession of the claimed method. The claims in this case are not directed to a particular compound, *cf. University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997), or to a method requiring a compound having a specific function, *cf. University of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 926 (Fed. Cir. 2004), but to a method that uses antibodies that bind to "soluble product[s] of . . . transformed cells" or PCMs (Spec. 7: 24-25). In view of this distinction, a structural description of the PCMs would not appear to be necessary to show possession of the claimed method. We reverse the rejection of claims 1-3, 8-12, 16, 17, 20, and 24 for lack of adequate written description.

II.

*Issue*

The Examiner has rejected claims 1-3, 8-12, 16, 17, 20, and 24 under 35 U.S.C. § 112, first paragraph, on the basis that "the specification gives insufficient guidance and direction as to what predetermined value in the ELISA test is indicative of a positive screening test for cancer" (Answer 5).

The Examiner reasons that "[t]he specification appears to arbitrarily choose a titer of 1:1000 as a cutoff for a positive test, see p. 10. . . . However, there is no evidence presented that these individuals with titers greater than 1000 actually have cancer." (*Id.*).

The Examiner also finds that "the characteristics of cultured cell lines generally differ significantly from the characteristics of the primary tumor" (*id.* at 7), and cites several references discussing differences between cells maintained in culture and cells *in vivo* (*id.* at 7-10). The Examiner finds that "[g]iven that cultured cell lines do not predictably express the markers expressed by tumor cells *in vivo*, one of skill in the art would not predictably expect that all mixtures of proteonic cancer markers . . . would be useful for the generation of polyclonal antibodies to form a reagent for cancer screening" (*id.* at 10). The Examiner concludes that "insufficient evidence has been provided which would allow one of skill in the art to predict that the invention will function as contemplated or claimed with a reasonable expectation of success" (*id.*).

Appellants contend that the Examiner's arguments "relate largely to diagnostic methods" (Appeal Br. 11), but the claims are directed to a screening method: "The difference between a screening method and a diagnostic method is that a screening method assigns nonsymptomatic patients to a risk category, whereas a diagnostic method determines whether or not a patient has a disease." (*Id.* at 10.) Appellants also contend that the claims encompass using proteonic cancer markers from both *in vitro* and *in vivo* sources, and "[p]roteonic cancer markers from in vivo sources would be expected to produce more efficacious antibodies for carrying out the

invention than those from in vitro sources, since 'real life' antigens would produce antibodies which [are] effective against them" (*id.* at 13).

The issue with respect to this rejection is: Does the evidence of record support the Examiner's position that the Specification does not enable a skilled worker to use the claimed method to screen for cancer?

*Findings of Fact*

1. The Specification discloses "a non-invasive cancer screening method" in which a saliva sample is contacted with "antibodies made against a mixture of plurality of proteonic cancer markers" (Spec. 4: 9-13).

2. The Specification states that "[t]he occurrence of [an] immunological reaction is indicative of cancer in the human from which the saliva sample was obtained" (*id.* at 4: 15-16).

3. The Specification provides a working example in which "saliva samples were obtained from normal population not diagnosed for cancer and samples from 32 individuals were tested by ELISA with anti-mixed PCM" (*id.* at 9: 34-37).

4. "Mix PCM consisted of mixture of PCMs for breast, colon, liver and ovary" (*id.* at 9: 22-23); i.e., PCMs derived from those types of cancer cell lines (*id.* at 7: 14-21).

5. The Specification states that ELISA tests were performed using "[a]nti-proteonic cancer marker (Anti-PCM) diluted in 3% gelatin from 1:100 to 1:218700" (*id.* at 8: 28-29).

6. The Specification discloses that "proteonic cancer markers in saliva of normal people . . . ranged from 1:200 to 1:1600" in an ELISA test" (*id.* at 10: 4-5).[2]

7. The Specification states that the two samples with the lowest PCM titers "were obtained from young boys aged five and ten years. The other saliva samples were obtained from the adult population. This proves the known finding that cancer incidence, and thus the presence of PCMs, increases exponentially by aging." (*Id.* at 10: 7-10.)

8. The Specification states that the tested samples showing "titers above 1:1000 were considered as tentatively positive for early diagnosis of cancer" (*id.* at 10: 12-13).

9. The Specification discloses that the saliva samples with titers above 1:1000 in the ELISA test using anti-mixed PCM were assayed in ELISA tests using, separately, antibodies raised against breast cancer PCMs, colon cancer PCMs, liver cancer PCMs, and ovary cancer PCMs (*id.* at 10: 13-15).

10. The Specification discloses that the tested saliva samples showed ELISA titers of up to 1:1600 using anti-mixed PCMs, up to 1:8100 using anti-breast cancer PCMs and anti-colon cancer PCMs, up to 1:2700 using anti-liver cancer PCMs, and up to 1:4050 using anti-ovary cancer PCMs (*id.* at 11: 1-9 (Table 3, headed "ELISA titer . . . in saliva of people positive for cancer")).

---

[2] The Specification does not explain the significance of the ELISA titer numbers but it is clear that a higher absolute number (e.g., "12,000"; Spec. 9: 28) or a higher number after the colon in the ratios (e.g., in "1:1600") indicates a more positive test result. The Specification appears to use the absolute numbers and the ratios interchangeably.

11. The Specification concludes that the "use of saliva enables performance of a simple ELISA test versus the complicated double sandwich test if serum is used. The novel test gives diagnosis for a specific type of cancer: breast, colon, liver and ovary by using specific anti-serum." (*Id.* at 13: 9-12).

*Principles of Law*

> When rejecting a claim under the enablement requirement of section 112, the PTO bears an initial burden of setting forth a reasonable explanation as to why it believes that the scope of protection provided by that claim is not adequately enabled by the description of the invention provided in the specification of the application; this includes, of course, providing sufficient reasons for doubting any assertions in the specification as to the scope of enablement. If the PTO meets this burden, the burden then shifts to the applicant to provide suitable proofs indicating that the specification is indeed enabling.

*In re Wright*, 999 F.2d 1557, 1561-62 (Fed. Cir. 1993).

*Analysis*

The Specification states that the disclosed method detects the presence of cancer (FFs 1, 2). The Specification also provides evidence that, in the disclosed method, saliva from subjects who have not been diagnosed with cancer can show anti-mixed PCM titers as high as 1:1600 (FF 6), and concludes that those subjects with titers of 1:1000 or greater had cancer (FFs 8, 10). However, the Specification does not provide any independent evidence to show that any of these subjects actually had cancer; e.g., histological or imaging data showing the presence of cancer cells. Nor does the Specification provide evidence that any of the subjects with high anti-PCM titers were subsequently diagnosed with cancer.

The Specification does show that four people known to have cancer showed anti-PCM titers of up to 8150, for a breast cancer patient assayed using anti-breast cancer PCMs (Spec. 12: 1-5 (Table 4)[3]). The Specification did not, however, provide any evidence that the titers shown in Table 4 were actually the result of the cancer cells in the subjects. Notably, the Specification's data show that subjects "from normal population not diagnosed for cancer" (FF 3) had anti-breast cancer PCM titers of up to 1:8100 (FF 10) and the Specification provides no evidence to show that that patient actually had breast cancer. Thus, the evidence provided by the Specification does not show that anti-PCM titers correlate with the presence of cancer.

In a nutshell, the evidence provided in the Specification does not show that the claimed test can distinguish people who have cancer from people who do not. The Specification's conclusion that certain ELISA titers in the disclosed assay mean that the subject has cancer is not based on data that confirm that hypothesis, but only on assuming that the conclusion sought to be proved is correct. We conclude that the Specification itself provides an adequate basis for concluding that the claimed method is not enabled by the description of the invention provided in the Specification, and the burden was reasonably shifted to Appellants to provide suitable proof that the Specification is indeed enabling. *See In re Wright*, 999 F.2d at 1561-62.

---

[3] Our discussion of Table 4 excludes the patient with prostate/vocal cord cancer because the Specification states that this patient had been treated and "the treatment for cancer worked bringing the concentration of proteonic cancer markers to normal state" (Spec. 12: 25-26).

Appellants argue that the claims are not directed to a diagnostic method but to a screening method, and "a screening method assigns nonsymptomatic patients to a risk category, whereas a diagnostic method determines whether or not a patient has a disease" (Appeal Br. 10).

This argument is not supported by the Specification's description of the claimed method. The Specification describes "a non-invasive cancer *screening* method" (emphasis added) that brings a saliva sample into contact with "antibodies made against a mixture of plurality of proteonic cancer markers" (FF 1). The Specification also states that the "occurrence of [an] immunological reaction *is indicative of cancer*" (FF 2, emphasis added). Thus, the Specification does not purport to provide an assay to determine an individual's likelihood of developing cancer in the future, but an assay that determines the presence of cancer in an individual.

Appellants also argue that the claims encompass using "[p]roteonic cancer markers from in vivo sources [which] would be expected to produce more efficacious antibodies for carrying out the invention than those from in vitro sources" (Appeal Br. 13).

This argument is not persuasive, because the evidence provided by the Specification fails to show a correlation between anti-PCM titers and the presence of cancer. The Specification provides no basis for concluding that anti-PCM titers would correlate with the presence of cancer if the anti-PCMs were derived from a naturally occurring tumor rather than from cancer cells grown in a laboratory.

Regarding claims 16 and 17, Appellants argue that these claims "are limited to 'providing a mixture of proteonic cancer markers obtained from

breast, liver, colon, and ovarian cancers' which is closely supported by the experimental data of the application" (Appeal Br. 14).

This argument is also unpersuasive. The Specification discloses that subjects who have not been diagnosed with cancer showed anti-mixed PCM titers as high as 1:1600 in the claimed method (FF 6) and that subjects who have been diagnosed with cancer showed anti-mixed PCM titers as low as 1800 (Spec. 12: 1-5 (Table 4)). The Specification does not disclose the amount of variability inherent in the ELISA tests used in the working examples, but apparently the results can vary by at least 50 units: compare Tables 2 and 3, which show variability of at least two samples from 1200 and 1250 in Table 2 to 1150 and 1300 in Table 3.[4] The Specification does not state that any particular result (e.g., 1800) in the disclosed ELISA test is diagnostic of cancer, nor does the Specification provide sufficient evidence to conclude that the difference between a result of 1600 and a result of 1800 in the disclosed ELISA test is significant and reproducible. We conclude that claims 16 and 17 are nonenabled for the same reasons discussed above with respect to claim 1.

*Conclusion of Law*

The evidence of record supports the Examiner's position that the Specification does not enable a skilled worker to use the claimed method to screen for cancer.

---

[4] The tables do not correlate their entries but this is the minimum variability required by the results shown.

## SUMMARY

We reverse the rejection of claims 1-3, 8-12, 16, 17, 20, and 24 under 35 U.S.C. § 112, first paragraph, for lack of adequate written description.

We affirm the rejection of claims 1-3, 8-12, 16, 17, 20, and 24 under 35 U.S.C. § 112, first paragraph, for lack of enablement.

## TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

lp

JOHN R. CASPERSON
P.O. BOX 36369
PENSACOLA FL 32516-6369